



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/509,356	09/28/2004	Jon E. Stanat	2002B040A	5045
23455 7590 04/29/2008 EXXONMOBIL CHEMICAL COMPANY 5200 BAYWAY DRIVE P.O. BOX 2149 BAYTOWN, TX 77522-2149				
EXAMINER				
BULLOCK, IN SUK C				
ART UNIT		PAPER NUMBER		
1797				
MAIL DATE		DELIVERY MODE		
04/29/2008		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/509,356

Applicant(s)

STANAT ET AL.

Examiner

In Suk Bullock

Art Unit

1797

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 1/10/2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-5,12-24,26-28,31,32,36-38 and 40-42 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-5,12-24,26-28,31,32,36-38 and 40-42 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 September 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

Amendment to claim 1 is acknowledged.

No claim has been canceled and no new claim has been added. Thus, claims 1, 3-5, 12-24, 26-28, 31-32, 36-38, and 40-42 remain pending in this current application.

The following is a modified rejection from the previous Office Action mailed 10/24/2007. The modification was necessary to address the newly added limitation to claim 1.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 3-5, 12-24, 26-28, 31-32, 36-38, and 40-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 5,026,933 to Blain et al. (hereinafter "Blain") in view of EP 0 402 051 A2 (hereinafter "EP").

Blain discloses a process for producing substantially linear hydrocarbons by oligomerizing a lower olefin at elevated temperature and pressure with a selectivated crystalline molecular sieve catalyst (Abstract). When a surface-inactivated, but internally active, ZSM-23 metallosilicate zeolite catalyst is employed in an olefin oligomerization, the reaction yields a high quality, essentially linear oligomer stock which can be efficiently converted to high VI lube oils (col. 4, lines 24-34). The level of acid sites selectivated is dependent upon the size of crystallites. Smaller crystallites are preferred for oligomerization reactions and, therefore, more than 15% of the total Bronsted acid sites may require to be neutralized. The crystalline molecular sieve catalyst used is ZSM-23 which is selectivated with 2,4,6-trimethyl pyridine (col. 5, lines 1-21). Blain specifically discloses oligomerizing either propylene, butene or a mixture thereof. The oligomers produced may be separated into fractions by conventional distillation separation. The average degree of branching ranges from 0.80 to 2.00 .

See col. 5, line 26 to col. 7, line 2. Example XIV of the reference shows an oligomerization of 1-butene with a HZSM-23 catalyst which was treated with 2,4,6-collidine, operating temperature in the range of 180-205° C, pressure in the range of 520-540 psig (3.6-3.7 MPa), and WHSV in the range of 0.21-0.29. The example also shows the degree of branching for C₈ to C₁₆ from 0.96 to 1.34 (see Table 13). The reference further discloses that the olefin produced by the process may be used as is or may be blended with other olefins. One use for olefin oligomers is as alkylating agents in a process for the selective alkylation of an aromatic compound to produce phenylalkanes (col. 7, lines 3-17).

The difference between Blain and the claimed invention is that Blain does not specifically disclose oligomerizing a mixed olefin feed having 4 and 5 carbon atoms. However, it is noted that Blain discloses that a typical prior art reactive feedstock consists essentially of C₃-C₆ mono-olefins in the presence of a medium pore shape selective acid crystalline zeolite (col. 6, lines 51-64). Blain also discloses that substantially linear hydrocarbons are produced by oligomerizing lower olefin using a selectivated medium pores shape selective ZSM-23 catalyst. In view of these combined disclosure, it would have been obvious to one having ordinary skill in the art to have modified the process of Blain by employing a mixed feedstock of any combination from C₃-C₆ mono-olefins including the claimed mixed feedstock with the expectation of achieving similar results.

It is noted that Blain does not explicitly disclose a Type V double bond content of at most 10%. Since the process of Blain is similar to the claimed process, it would have

been expected that the process of Blain would also produce similar results with respect to a Type V double bond content.

Blain does not disclose the amount of methyl group branching contained in the dimer product. However, since the process is similar to the claimed process, i.e., similar feed and similar process conditions, it would have been expected that the dimer product produced by the process of Blain would contain similar amount of methyl group branching including the claimed amount of 62 to 83% absent any evidence to the contrary.

With regard to the claimed conversion rate per pass of at most 65%, it would have been obvious to one having ordinary skill in the art to determine the most effective conversion rate per pass depending upon desired products. It is known to those skilled in the art that process conditions determine the conversion rate per pass which in turn effect product distribution.

Blain does not teach downstream processing of the recovered oligomers to produce other products, i.e., oxonation, hydrogenation, esterification, etherification, etc.

The EP reference discloses processes for preparation of saturated alcohol derivatives and their use in detergent; plasticizer; and synthetic lubricant formulations (page 2, lines 1-12). EP discloses using a selectivated ZSM-23 catalyst for oligomerization of propylene and/or butene to produce oligomers having an average degree of branching from 0.80 to 2.00, followed by hydroformylation (oxonation) of oligomer and esterification of the saturated alcohol. The products are used in

detergents, plasticizers, and lubricants. The resultant alcohols can be esterified or etherified. See page 2, lines 33-47 and page 3, lines 4-42.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Blain and further process the recovered oligomers to produce valuable products as taught by the EP reference.

Response to Arguments

Applicant's arguments filed 1/10/2008 have been fully considered but they are not persuasive.

Applicant argues, "Notwithstanding that least Blain et al. states that 'typical reactive feedstocks consist essentially of C3-C6 mono-olefins' in the Background section, the fact of the matter is that neither reference incorporates 'typical reactive feedstocks' at any point into the inventions discussed therein." The argument is not persuasive because in considering the disclosure of a reference, it is proper to take into account not only specific teachings of the reference but also the inferences which one skilled in the art would reasonably be expected to draw therefrom. In re Preda, 401 F.2d 825, 826, 159 USPQ 342, 344, (CCPA 1968).; In re Lamberti, 545 F.2d 747, 750, 192 USPQ 278, 280 (CCPA 1976). Blain disclosed that it is known in the oligomerization art to employ a reactive feedstock consisting essentially of C3-C6 mono-olefins in the presence of a medium pore shape selective acid crystalline zeolite. Therefore, Blain recognized the possibility of using a feed consisting essentially of C3-

C6 mono-olefins and, therefore, meets the claimed mixed olefin feed having 4 and 5 carbon atoms.

Applicant further argues that "Blain et al. and EP '051 expressly limit their products to methyl only branching" whereas the amended independent claim 1 "set forth the limitation that the proportion of dimer product that is linear or has single methyl branching is from 6" to 83%." The argument is not persuasive because the references are explicitly disclosing methyl branching only for **C12+ olefins** and not the **dimer** product as claimed in the present invention (**emphasis added**). Therefore, since the process conditions, i.e., temperature, pressure, and WHSV, disclosed by the references encompasses the claimed process conditions and the starting olefin feed disclosed by Blain encompasses the claimed olefin feed, it would have been expected that the process of Blain would have yielded similar claimed dimer product including the claimed 62 to 83% methyl group branching.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

Art Unit: 1797

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to In Suk Bullock whose telephone number is 571-272-5954. The examiner can normally be reached on Monday - Friday 6:00-2:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 571-272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/I. B./
Examiner, Art Unit 1797

/Glenn A Caldarola/
Acting SPE of Art Unit 1797

